DAM-BREAK ANALYSIS

Tape Number

Characteristics of Dam-Break Floods

BASIC CONCEPTS OF DAM BREAKS AND DEVELOPMENT OF DAM BREAK HYDROGRAPHS — HEC-395
Basic concepts and assumptions; methods of developing the dam break hydrograph for various modes of failure; envelope curves; failure scenarios.
(Gee;1980;color;51 min.)

Computer Program DAMBRK

INTRODUCTION TO COMPUTER PROGRAM DAMBRK — HEC-396
Nature and purpose of DAMBRK; breach simulation and storage routing capabilities; basis for reservoir outflow determination.
(Peters;1980;color;61 min.)

DEVELOPMENT OF CROSS SECTION AND ROUGHNESS DATA FOR DAMBRK — HEC-397
Input required to define geometric and roughness characteristics of cross sections; cross section consistency requirements; cross section spacing; bridges; definition of off-channel storage; conversion of HEC-2 - format data; development of composite n values.
(Peters;1980;color;60 min.)

INPUT REQUIREMENT FOR DAMBRK — HEC-398
Input structure; example input preparation for a basic application.
(Gee;1980;color;61 min.)

DAMBRK OUTPUT — HEC-399
Types of output; use of the variable JNK to control output; detailed description of output for a basic application.
(Peters;1980;color;62 min.)

DAMBRK OPTIONS — HEC-400
Multiple-dam, multiple-reach options; simultaneous solution of multiple reaches; input and output illustrations.
(Fread;1980;color;60 min. & 15 min.)

TROUBLE SHOOTING DAMBRK OUTPUT — HEC-402
Causes of program "blow-ups"; common input errors; automatic procedures in DAMBRK to counter nonconvergence; checking procedures.
(Fread;1980;color;60 min.)

DAMBRK VERSION B (FLOOD PLAIN MODEL) — HEC-403
Capabilities of version B; input and output for version B; sensitivity of flood wave movement to flood plain segmentation.
(Fread;1980;color;60 min. & 15 min.)

DATA STORAGE SYSTEM

	Tape Number
USE OF THE HEC DATA STORAGE SYSTEM FOR WATER AND PLANNING STUDIES Capability of HEC system HEC-DSS and water control software, application of HEC-DSS: use of functions, macros and menus. (Pabst;1983;color;62 min.)	HEC-467
CAPABILITIES OF DISPLAY Program options and applications. (Montalvo;1983;color;52 min.)	HEC-470
DEVELOPING FLOW DATA FOR CONSERVATION Types of data required; computerized methods of accessing and developing flow data; use of HEC-DSS data entry programs; application of program MATHPK. (Dotson;1987;color;60 min.)	HEC-622
INTRODUCTION TO THE DATA STORAGE SYSTEM (DSS) Database concepts. DSS files. Records and record pathnames. Time series and paired data. Utility programs: basic concepts. DSS DSPLAY graphics demonstration. (Peters;1987;color;78 min.)	HEC-624
USE OF DSS WITH APPLICATION PROGRAMS Regular Interval time-series data conventions. Specifying data to be retrieved and stored from DSS files (ZR and ZW cards). Introduction to COED. (Charley;1987;color;70 min.)	HEC-625
DATA MAINTENANCE WITH DSSUTL Catalog features. Use of DSSUTL to tabulate, edit, rename and delete DSS data records. Squeezing files. On-line help aids. (Huff;1987;color;60 min.)	HEC-626
DSPLAY AND MACROS Advanced features of DSPLAY; windowing, editing, splitting, and shading. Use with other plot devices. Description and use of macros. (Pabst;1987;color;60 min.)	HEC-627
TIME SERIES DATA ENTRY DSSIN, DSSTS. Irregular interval time-series conventions. DSSITS. SHFDSS and DSSSHF. Demo of SHFDSS and DSSSHF. (Huff;1987;color;75 min.)	HEC-628
PAIRED DATA AND EAD PROGRAMS Paired data conventions. Program PIP and DSSPD. Use of DSS with EAD. (Carl;1987;color;60 min.)	HEC-629

	Tape Number
DATA MANAGEMENT IN REAL-TIME WATER CONTROL An overview of a software system which facilitates the evaluation of flood conditions for the purposes of water control decisions. Software review: data acquisition, data management, data utilities, hydrologic analysis, and support software. (Peters;1987;color;60 min.)	HEC-630
INTERACTIVE ENHANCEMENTS - PREAD Concepts and features: function keys, macros, menus and screens. PREAD files. Special PREAD services. Combining functions. (Pabst;1987;color;60 min.)	HEC-688
MANUAL DATA ENTRY AND EDITING WITH DWINDO Interactive entry and editing of DSS data presented in a form on the terminal screen. (Huff;1987;color;60 min.)	HEC-690
INTRODUCTION TO REPORT GENERATION Orientation and capabilities of the REPGEN program for generating routine, reoccurring reports. (Montalvo;1989;color;30 min.)	HEC-729
DATA COMPUTATIONAL TOOLS Concepts, features and commands of MATHPK. Use of MATHPK and STATS for data analysis. (Dotson;1989;color;75 min.)	HEC-730
DATA COMPUTATIONAL TOOLS Concepts, features and commands of DSSMATH. Use of DSSMATH for data analysis. (Montalvo;1992;color;60 min.)	HEC-765
COMPUTATIONS WITH WCCOMP WCCOMP for automated, real-time data processing. Features and applications. (Huff;1987;color;60 min.)	HEC-693
REPORT INDEXING AND BULLETIN BOARD APPLICATIONS Report indexing software. Integrated application with PREAD screens in bulletin board system. (Pabst;1987;color;60 min.)	HEC-694
DATA PRESENTATION High level user interfaces for information retrieval. Screen selection for engineer and management level access of information. Data and report bulletin boards. Graphics table menu selection for study and real-time data retrieval. Briefing applications. Continuously operating informational displays. (Pabst;1989;color;60 min.)	HEC-731

FLOOD HYDROGRAPH ANALYSIS

Tape Number

Computer Program HEC-1

RIVER BASIN MODELING — HEC-504 (replaces HEC-008)
General concepts of basin modeling, including basin analysis.
(Dotson;1983;color;52 min.)

INTRODUCTION TO HEC-1 FLOOD HYDROGRAPH PACKAGE — HEC-500
Flood hydrograph analysis techniques available in HEC-1 including precipitation and loss computations and capabilities for computing runoff.
(Bonner;1983;color;53 min.)

HEC-1 INPUT REQUIREMENTS — HEC-501
Description of general input requirements for determining subbasin runoff, job set-up, options and examples.
(Ely;1983;color;47 min.)

ESTIMATION OF UNIT HYDROGRAPH AND LOSS RATE PARAMETERS — HEC-502
Theory and application of parameter estimation; basin model calibration using HEC-1.
(Ford;1983;color;50 min.)

REGIONALIZATION OF UNIT HYDROGRAPH AND LOSS RATE PARAMETERS — HEC-503
Need for regionalization; approaches to regionalization; nature of regression analysis; selecting watershed characteristics; assessing reliability.
(Feldman;1983;color;54 min.)

DEVELOPMENT OF A RIVER BASIN MODEL USING HEC-1 — HEC-505
Description of HEC-1 input required for river basin analysis.
(Peters;1983;color;62 min.)

BASIN MODELING LEADING TO PLAN SELECTION — HEC-511
Multiplan approach with the addition of economic data; HEC-1 input requirements; system optimization capabilities and applications.
(Feldman;1983;color;60 min.)

MULTIPLAN ANALYSIS — HEC-512
Description of basin modeling using multiflood, multiplan approach and HEC-1 input requirements.
(Feldman;1983;color;60 min.)

Tape Number

Computer Program HEC-1 (continued)

PLANNING, COMPUTER MODELS AND INTEGRATED USE — HEC-539
Describe how HEC-1 and other HEC models are typically interfaced to perform comprehensive planning studies. Overview the planning process, computer tool usage and discuss the Passaic River Basin study as an example methodology of how to conduct a comprehensive flood control study.
(Davis;1985;color;60 min.)

RIVER BASIN MODELING USING HEC-1 — HEC-684
Description of HEC-1 input for multiple basins and routing reaches; model calibration for a historic storm.
(Dotson;1987;color;60 min.)

Flood Forecasting

REAL-TIME PRECIPITATION ANALYSIS — HEC-514
Creation of a subset data file with EXTRCT; the EXTLIST input file for EXTRCT; concepts related to precipitation analysis in real time; purpose and capabilities of computer program PRECIP; input requirements for PRECIP; output from PRECIP; precipitation summary table.
(Peters;1983;color;66 min.)

INTRODUCTION TO RUNOFF FORECASTING AND HEC-1F* — HEC-515
Aspects of short term runoff forecasting; approaches and practical considerations; forecast evaluation; characteristics of HEC-1F as a tool for forecasting; criteria for basin subdivision; forecasting as a two-step process; parameter estimation in real time; generating forecasts at downstream control points; zonal estimate of runoff parameters; summary of forecasting procedure.
(Ford;1983;color;51 min.)

PARAMETER ESTIMATION WITH HEC-1F* — HEC-516
Purpose and role of parameter estimation; forecasting framework; parameters subject to estimating; objective function; parameter constraints; univariate search technique; missing data and other operational features.
(Ford;1983;color;51 min.)

INPUT/OUTPUT FOR PARAMETER ESTIMATION WITH HEC-1F* — HEC-517
Input requirements for real-time parameter estimation with HEC-1F; use of DSS; example input set; output interpretation parameter estimation summary table; implementation of HEC-1F with MODCON.
(Ford;1983;color;51 min.)

INTERACTIVE PROCESSING AND FILE CONTROL — HEC-518
MODCON's role in defining and controlling analysis tasks. Role of PREFOR.
(Huff;1983;color;45 min.)

*These lectures are available on one 153-minute cassette.

Tape
Number

Flood Forecasting (continued)

GENERATION OF BASIN-WIDE RUNOFF FORECASTS WITH HEC-1 — HEC-519
Forecast requirements; concept of blending; sequence of computations parameters; output; forecast summary table; missing data considerations.
(Peters;1983;color;62 min.)

Flood Routing

INTRODUCTION TO FLOOD ROUTING — HEC-682
General concepts of flood routing; nature and purpose; simplified methods; demonstration of simple flood routing procedures.
(Gee;1987;color;60 min.)

OVERVIEW OF CHANNEL ROUTING TECHNIQUES — HEC-774
Presentation of simple routing techniques such as Muskingum, Modified Puls, Kinematic Wave, Diffusion Wave, and Muskingum-Cunge in relation to the St. Venant equations.
(Brunner;1993;color;60 min.)

SELECTING THE APPROPRIATE ROUTING TECHNIQUES — HEC-778
Presentation of available guidance on selection of routing method. Discussion of conditions under which various routing techniques are/are not applicable.
(Brunner;1993;color;60 min.)

RESERVOIR ROUTING — HEC-740
Discuss HEC-1 reservoir routing capability and limitations.
(Hayes;1989;color;60 min.)

Hydrographic Analysis

NONUNIFORM LOSS RATE ANALYSIS — HEC-732
HEC-1 exponential, Horton, Holtan, SCS, and Green and Ampt loss functions; concepts of soil moisture accounting.
(Feldman;1989;color;60 min.)

HYDROLOGIC ANALYSIS OF FLOODS - AN OVERVIEW — HEC-537
Overview of water resource investigations and objectives involving the hydrologic analysis of floods by basin modeling.
(Peters;1985;color;60 min.)

BASIN RAINFALL AND LOSS ANALYSIS — HEC-551
Techniques for areal averaging of rainfall and for distributing rainfall in time; the concept of effective rainfall; computer program HEC-1 loss analysis methods.
(Willey;1985;color;60 min.)

UNIT HYDROGRAPH DEVELOPMENT — HEC-681
The problem of determining synthetic unit hydrographs for ungaged basins; unit hydrograph development using Clark, Snyder and SCS procedures; comparison of methods and application.
(Peters;1987;color;70 min.)

Tape
Number

Hypothetical Storms

STANDARD PROJECT AND PROBABLE MAXIMUM STORM DETERMINATION — HEC-506
Description of the concepts and application of the SPS and the PMS criteria.
(Peters;1983;color;58 min.)

HYPOTHETICAL STORMS AND DEPTH AREA OPTION — HEC-645
Development of hypothetical storms using generalized criteria (e.g. TP 40). Application of HEC-1 using hypothetical storms and automated depth-area storms simulation option.
(Peters;1987;color;90 min.)

USE OF PRECIPITATION-RUNOFF MODELS TO DEVELOP DISCHARGE-FREQUENCY CURVES — HEC-739
Approaches to determination of frequency curves from precipitation -runoff models. Use of multiple hypothetical events in HEC-1. Calibration to adopted frequency relationships.
(Davis;1989;color;60 min.)

Kinematic Wave

HYDRAULICS OF THE KINEMATIC WAVE — HEC-642
The hydraulic theory used to develop the kinematic wave equations and the numerical techniques used to solve the equations is covered.
(Goldman;1987;color;65 min.)

DETERMINATION OF KINEMATIC WAVE PARAMETERS — HEC-643
Techniques for developing kinematic wave parameters and application using HEC-1.
(Goldman;1987;color;60 min.)

BASIN REPRESENTATION WITH KINEMATIC WAVE MODEL ELEMENTS — HEC-733
Description of how the kinematic wave elements (overland flow planes, collector and main channels) can be used to represent basin runoff.
(Goldman;1989;color;60 min.)

FLOOD WARNING-PREPAREDNESS

	Tape Number
OVERVIEW OF FLOOD PREPAREDNESS PROGRAMS An overview of flood warning-preparedness, the present Corps regulations and policies, responsibilities of other Federal agencies, will be given. (Burnham;1989;color;60 min.)	HEC-737 (replaces HEC-715)
ROLE OF THE NATIONAL WEATHER SERVICE The National Weather Service's authorities and role regarding flood warning - preparedness will be described. (Gimmestad;1989;color;65 min.)	HEC-716
OVERVIEW OF FLOOD THREAT RECOGNITION METHODS This presentation describes state-the-art methods for flood-threat recognition including the ALERT system. (Feldman;1989;color;50 min.)	HEC-717
DATA COLLECTION AND PROCESSING METHODS An overview of data collection, communication, and processing methods related to flood-threat recognition/forecasting and warning dissemination will be made. (Roper;1989;color;65 min.)	HEC-718
PRIVATE SECTOR SERVICES IN FLOOD THREAT RECOGNITION SYSTEMS The capabilities of the private sector to plan, design, and implement flood threat recognition systems and to provide continuous service to the local communities will be presented. (Barrett;1989;color;55 min.)	HEC-719
CASE EXAMPLE: VENTURA COUNTY A case example of the Ventura, CA., flood-threat recognition system will be presented. (Taylor;1989;color;70 min.)	HEC-720
CASE EXAMPLES: SOUTH ATLANTIC DIVISION Selected examples of flood warning - preparedness systems under study or already implemented by the South Atlantic Division will be presented. (Rogers;1989;color;45 min.)	HEC-721
FLOOD WARNING DISSEMINATION AND EMERGENCY RESPONSE An overview of emergency response actions and post flood considerations and discussion of the Gatlinburg, TN. case example will be made. (Owen;1989;color;60 min.)	HEC-722
FLOOD WARNING PREPAREDNESS - THE NEXT FIVE YEARS Where we stand now and a forward view of federal, private and local activities in the flood warning - preparedness area. Issues of continued maintenance and support, ownership, and implementation will be addressed. (Curtis;1989;color;70 min.)	HEC-723

	Tape Number
OVERVIEW OF CORPS EMERGENCY OPERATIONS PROGRAM The authorities, organization, and responsibilities of the Corps flood emergency operations program will be presented. (O'Bryan;1989;color;80 min.)	HEC-724
HQUSACE HYDROLOGY/HYDRAULICS PERSPECTIVE The HQUSACE perspective for hydrologic engineering aspects for flood warning - preparedness programs will be presented. An open class discussion session will follow. (Smith;1989;color;60 min.)	HEC-725
CASE EXAMPLE FPMS STUDY A case example of one of the initial FPMS tests will be presented. (Engel;1989;color;55 min.)	HEC-726
PLAN FORMULATION AND EVALUATION Strategy for formulating and evaluating flood warning - preparedness programs will be presented. (Davis;1989;color;60 min.)	HEC-727
CASE EXAMPLE - WARNING AND RESPONSE FROM THE LOCAL COMMUNITY PERSPECTIVE, RAPID CITY, SOUTH DAKOTA The presentation will describe the event, warning dissemination, response, and aftermath of the 1972 flood in Rapid City, South Dakota. (Barnett;1989;color;90 min.)	HEC-728
ALERT SYSTEMS FOR FLOOD THREAT RECOGNITION An overview of flood threat-recognition systems used by the National Weather Service will be presented. The Alert system will be emphasized. (Bartfeld;1989;color;60 min.)	HEC-734

GROUNDWATER HYDROLOGY

Tape Number

Groundwater Management

CONJUNCTIVE USE WATER SUPPLY — HEC-616
Role of groundwater in conjunctive use planning; types of conjunctive use systems; conjunctive use facilities; hydrologic and hydraulic; environmental, economic, legal/institutional and financial aspects.
(Davis;1986;color;60 min.)

Groundwater Modeling

INTRODUCTION TO GROUNDWATER MODELING — HEC-603
Groundwater flow equations; analytical, finite difference, finite element solutions; steady-state and transient flow.
(Ford;1986;color;60 min.)

GROUNDWATER DATA MANAGEMENT — HEC-604
Retrieving groundwater data from WATSTORE using microcomputer software; creating a groundwater database; microcomputer database management.
(Johnson;1986;color;55 min.)

GROUNDWATER DATA ANALYSIS — HEC-605
Importing groundwater data for calculations; statistics and graphics; microcomputer spreadsheet analysis.
(Johnson;1986;color;60 min.)

DESK TOP ANALYSIS AND FORMULATION OF GROUNDWATER MODELS — HEC-606
Boundary conditions; initial conditions; spatial and temporal discretization; pumping and recharge sources.
(McLaughlin;1986;color;50 min.)

APPLICATION: SAN ANDRES-GLORIETA AQUIFER, NM — HEC-607
Formulation and application of a groundwater model for a confined aquifer.
(McLaughlin;1986;color;70 min.)

HEC GROUNDWATER SIMULATION PACKAGE — HEC-608
Data preparation, parameter generation, groundwater simulation, output graphics.
(Johnson;1986;color;30 min.)

AQUIFER PARAMETER GENERATION — HEC-609
Parameter generation methods, kriging, example applications.
(Johnson;1986;color;45 min.)

AQUIFER SIMULATION — HEC-610
Preparation of data for groundwater flow simulation.
(Johnson;1986;color;45 min.)

Tape
Number

Methods of Analysis

SEEPAGE AND DRAINAGE — HEC-611
Continuity equation, Laplace equation, Darcy's law, boundary conditions, flow nets, flow patterns from field measurements.
(Hanson;1986;color;75 min.)

APPLICATION: SEEPAGE AND DRAINAGE — HEC-612
Examples of the analysis of seepage and drainage problems.
(Hanson;1986;color;80 min.)

CONDUCTING GROUNDWATER QUALITY INVESTIGATIONS — HEC-613
Principles and guidelines for conducting investigations for groundwater quality and contamination; data collection and analysis.
(Schmidt;1986;color;60 min.)

TOXIC WASTES AND MODELING — HEC-614
Principles and guidelines for analysis of toxic waste problems.
(Schmidt;1986;color;50 min.)

Principles of Groundwater

BASIC CONCEPTS AND PARAMETERS — HEC-595
Aquifers and confining beds porosity, specific yield and specific retention, heads and gradients, hydraulic conductivity, transmissivity, storage coefficient units and conversions.
(Amar;1986;color;50 min.)

APPLICATIONS: BASIC GROUNDWATER HYDROLOGY — HEC-597
Examples of the use of basic groundwater parameters and concepts in groundwater investigations.
(Amar;1986;color;45 min.)

WELL HYDRAULICS — HEC-598
Cone of depression; aquifer tests; time-drawdown analysis; distance draw down analysis; single well tests; well interference; aquifer boundaries.
(Scalmanini;1986;color;50 min.)

WELL HYDRAULICS AND MONITORING — HEC-599
Well construction methods, well-logs, monitoring, water well design, well acceptance tests and well efficiency, specific capacity and transmissivity, well-field design.
(Scalmanini;1986;color;50 min.)

APPLICATION: WELL AND WELL SYSTEMS — HEC-600
Experiences with silting, drilling, development and monitoring of wells in groundwater investigations; principles for proper use.
(Scalmanini;1986;color;75 min.)

Tape
Number

Principles of Groundwater (continued)

THEORY OF GROUNDWATER FLOW — HEC-601
Theory of groundwater movement; Darcy's Law; transmissivity; storage coefficient.
(King;1986;color;60 min.)

APPLICATION: TYPES OF GROUNDWATER FLOW — HEC-602
Application of groundwater flow principles to simple flow systems including well drawdown.
(King;1986;color;50 min.)

HYDROPOWER

Tape Number

Computer Program HEC-5

CAPABILITIES OF HEC-5 FOR HYDROPOWER ANALYSIS — HEC-475
HEC-5 options for hydropower analysis; example applications.
(Eichert;1983;color;61 min.)

SYSTEM POWER CONCEPTS — HEC-476
Benefits and limitations of a system operation; HEC-5 system power routine; added program input requirements.
(Bonner;1983;color;60 min.)

HYDROPOWER OPTIMIZATION USING HEC-5 — HEC-477
Application to energy and capacity determination; input and output description.
(Eichert;1983;color;57 min. & 12 min.)

INTERIOR FLOODING HYDROLOGY

Tape Number

Basic Concepts

PLANNING INTERIOR FLOOD CONTROL - AND OVERVIEW — HEC-564
Definition of the interior flood control problem; planning study objectives; approaches to analysis of interior flood control alternatives.
(Davis;1986;color;70 min.)

HYDROLOGIC STUDY PROCEDURES — HEC-565
Organization of available information, preparation and initiation of hydrologic investigation, study phases and level of detail.
(Burnham;1986;color;70 min.)

ECONOMICS OF INTERIOR FLOOD CONTROL — HEC-566
Overview of economic analysis procedures, damage computation for urban areas, damage computation for agricultural areas, benefit computations.
(Davis;1986;color;70 min.)

OCE POLICY REGARDING INTERIOR FLOOD CONTROL — HEC-569
Survey and summary of Corps regulations and policy regarding interior flood control analysis, special problems related to degree of protection, coordination, etc., reporting study results, common shortcomings from the reviewer's point of view, question and answer period.
(Huffman;1986;color;60 min.)

Case Studies

CASE STUDY - CONTINUOUS SIMULATION — HEC-568
(Fitzgerald;1986;color;60 min.)

ISSUES FROM SELECTED CASE STUDIES — HEC-575
General description of important issues relating to major interior flood control projects in the St. Louis District.
(Dyhouse;1986;color;75 min.)

Procedures

CONTINUOUS SIMULATION OF INTERIOR FLOOD CONTROL IMPROVEMENTS — HEC-567
Concepts and procedures for performing continuous period-of-record analysis of interior flood control; theoretical basis; example applications.
(Dotson;1986;color;70 min.)

PERIOD-OF-RECORD, DISCRETE EVENT APPROACH TO INTERIOR FLOOD CONTROL ANALYSIS — HEC-570
Concepts; continuous vs. single event analysis; data considerations; computer models; example application - Moline, Illinois project.
(Peters;1986;color;70 min.)

Tape
Number

Procedures (continued)

INTERIOR DRAINAGE FLOOD ROUTING (INTDRA) PROGRAM — HEC-571
Capabilities of an HEC computer program for routing floods through interior ponding areas taking into account seepage, overflows or diversions, gravity drainage and pumping stations; theoretical basis for program; assumptions and limitations; input requirements; program output.
(Carl;1986;color;60 min.)

COINCIDENT FREQUENCY ANALYSIS — HEC-572
Objectives of coincident frequency analysis; joint probability distributions; total probability theorem; example.
(Peters;1986;color;65 min.)

HYDRAULIC DESIGN CONSIDERATIONS OF INTERIOR FLOOD CONTROL — HEC-573
Overview of problems associated with hydraulic design of channels, gravity drains and pumping stations.
(Dyhouse;1986;color;60 min.)

SIZING OF FLOOD CONTROL COMPONENTS WITH HEC-1 — HEC-574
Optimal sizing of flood control components for interior drainage systems using HEC-1; analytical concepts and procedures utilized in program; capabilities and limitations.
(Feldman;1986;color;90 min.)

GRAVITY OUTLET ANALYSIS USING THE IFH PACKAGE — HEC-743
Gravity outlet analysis concepts for interior areas; gravity outlet rating development.
(Dodson;1990;color;60 min.)

HYDRAULIC ANALYSIS OF PUMP STATIONS — HEC-744
Hydraulic analysis of pump stations for interior areas.
(Fletcher;1990;color;60 min.)

INTERIOR FLOODING HYDROLOGY (IFH) PACKAGE — HEC-745
Program capabilities and features; description of data entry, computations, and results; program status.
(Burnham;1990;color;60 min.)

NONSTRUCTURAL PLANNING

	Tape Number
CONCEPTS AND CHARACTERISTICS OF NONSTRUCTURAL MEASURES Description of the evolution of nonstructural measures in water resources planning; categorization of nonstructural measures for balanced investigations; and important characteristics and considerations of nonstructural measures in the formulation and evaluation process. Overview of analytical tools for evaluating nonstructural measures. (Ford;1984;color;50 min.)	HEC-523
ECONOMIC CHARACTERISTICS OF NONSTRUCTURAL MEASURES Summary physical characteristics, and relationships between location in flood plain and expected annual damage, comparing costs and flood damage reduction, preliminary screening criteria. (Ford;1984;color;50 min.)	HEC-524
COMPUTATION OF NED BENEFITS FOR NONSTRUCTURAL MEASURES Review of Corps regulations and reporting requirements for benefit computations, conceptual basis, computations, examples and illustrations. (Johnson;1984;color;55 min.)	HEC-525
A STRATEGY FOR SYSTEM FORMULATION System formulation concepts and important perspectives, descriptions of a systematic, logic-based procedure for configuring flood plain management measures (structural and non-structural) into alternative systems. (Ford;1984;color;53 min.)	HEC-526
OVERVIEW OF EXPECTED ANNUAL FLOOD DAMAGE PROGRAM Overview of EAD program and description of computational concepts and methods, input requirements and output displays. (Kubik;1984;color;53 min.)	HEC-527
CASE STUDY - NONSTRUCTURAL PLAN FORMULATION FOR PHOENIX AREA Overview of investigation, analytical procedures and use of spatial analysis, implementation issues, status of investigation. (Burnham;1984;color;53 min.)	HEC-528
FLOOD FORECASTING, FLOOD WARNING AND FLOOD EMERGENCY PREPAREDNESS PLANNING (Owen;1984;color;46 min.)	HEC-529

REAL-TIME WATER CONTROL

Tape Number

Data Acquisition

DATA ACQUISITION SYSTEMS — HEC-554
Sources, communications protocols, GOES DPCs, DARDCs and telemarks. Modems. Access to downlinks. ALERT systems as data sources.
(Pabst;1985;color;60 min.)

"GOES" DATA PROCESSING — HEC-557
Decoding and loading: DCP and downlink formats, Sutron software. Conversion: Sutron, CONVRT. Screening: Sutron, CONVRT. Database entry: GOESLD. Data status report with DATAST.
(Huff;1985;color;60 min.)

NWS DATA PRODUCTS AND SOURCES SOFTWARE FOR NWS COMMUNICATIONS — HEC-689
Organization: WSFO, WSO, RFC. AFOS forecast and data products. DATACOL. MON/IDX/VUENWS
(Charley;1987;color;60 min.)

Data Storage System

USE OF THE HEC DATA STORAGE SYSTEM FOR WATER AND PLANNING STUDIES — HEC-467
Capability of HEC system HEC-DSS and water control software; application of HEC-DSS: use of functions, macros and menus.
(Pabst;1983;color;61 min.)

CAPABILITIES OF DISPLAY — HEC-470
Program options and applications.
(Montalvo;1983;color;52 min.)

INTERACTIVE ENHANCEMENTS - "PREAD" — HEC-561
Concepts and features: function keys, macros, menus. PREAD files. Special PREAD services. Combining functions.
(Pabst;1985;color;60 min.)

WATER CONTROL DECISION-MAKING IN THE REAL TIME - - AN OVERVIEW — HEC-620
The water control problem; recent Corps activities in the area of water control; overview of the capabilities of the HEC software system which facilitates the making of real-time water control decisions.
(Pabst;1986;color;60 min.)

INTERACTIVE ENHANCEMENTS - PREAD — HEC-688
Concepts and features: function keys, macros, menus and screens. PREAD files. Special PREAD services. Combining functions.
(Pabst;1987;color;60 min.)

Tape Number

Data Storage Systems (continued)

MANUAL DATA ENTRY AND EDITING WITH DWINDO — HEC-690
Interactive entry and editing of DSS data presented in a form on the terminal screen.
(Huff;1987;color;60 min.)

INTRODUCTION TO REPORT GENERATION — HEC-729
Orientation and capabilities of the REPGEN program for generating routine, reoccurring reports.
(Montalvo;1989;color;30 min.)

DATA COMPUTATIONAL TOOLS — HEC-730
Concepts, features and commands of MATHPK. Use of MATHPK and STATS for data analysis.
(Dotson;1989;color;75 min.)

COMPUTATIONS WITH WCCOMP — HEC-693
WCCOMP for automated, real-time data processing. Features and applications.
(Huff;1987;color;60 min.)

REPORT INDEXING AND BULLETIN BOARD APPLICATIONS — HEC-694
Report indexing software. Integrated application with PREAD screens in bulletin board system.
(Pabst;1987;color;60 min.)

DATA PRESENTATION — HEC-731
High level user interfaces for information retrieval. Screen selection for engineer and management level access of information. Data and report bulletin boards. Graphics table menu selection for study and real-time data retrieval. Briefing applications. Continuously operating informational displays.
(Pabst;1989;color;60 min.)

Reservoir Simulation

HEC-5 REAL TIME WATER CONTROL OPTIONS — HEC-621
Use of new program options to achieve significantly faster throughput; use of the HEC-5 without HEC-5B; executing HEC-5 with MODCON; use of the binary file for local incremental flows; HEC-5 options for real-time user specification of releases, reservoir storages and operational channel capacities.
(Hayes;1986;color;60 min.)

REAL-TIME CAPABILITIES OF HEC-5 — HEC-697
Overview of computer program HEC-5 capabilities for real time water control.
(Hayes;1987;color;60 min.)

INTERACTIVE CAPABILITIES OF MOD5 — HEC-698
Use of MOD5 for interactively changing operational model parameters.
(Hayes;1987;color;60 min.)

Tape Number

Reservoir Simulation (continued)

HEC-5 FLOOD CONTROL OPTIONS — HEC-699
HEC-5 flood control options; forecast interval, contingency factor, system flood control guide curves; variable channel capacities, gate regulation curve option, and hinge pool option.
(Hayes;1987;color;60 min.)

Streamflow Forecasting

INTRODUCTION TO STREAMFLOW FORECASTING AND OPERATIONS SIMULATION — HEC-562
DSS interface. Basin rainfall-runoff processes and parameters: unit graph, base flow, loss rate. Stream network processes and parameters: routing methods, linkage. Calibration of model parameters.
(Peters;1985;color;60 min.)

REAL-TIME PRECIPITATION ANALYSIS — HEC-563
Concepts. Purpose and capabilities of program PRECIP. PRECIP input requirements, output and summary tables.
(Charley;1985;color;60 min.)

INPUT/OUTPUT FOR PARAMETER ESTIMATION WITH HEC-1F — HEC-695
Input requirements for real-time parameter estimation with HEC-1F. Integration with DSS. Example input set. Output interpretation. Parameter estimation summary table. Implementation of HEC-1F with MODCON.
(Peters;1987;color;60 min.)

GENERATION OF BASIN-WIDE FORECASTS WITH HEC-1F — HEC-696
Forecast requirements. Concept of blending. Sequence of computations for basin-wide forecasting. Input requirements. Zonal designation of parameters. Role of PREFOR. Output and summary tables. Effects of missing data.
(Peters;1987;color;60 min.)

RESERVOIR SYSTEM ANALYSIS

Tape Number

Basic Concepts

USE OF OPTIMIZATION MODELS FOR RESERVOIR ANALYSIS — HEC-472
Application of system analysis tools to reservoir design and operation problems; summary of applicable operation research (OR) tools; review of available "optimization" models of reservoir systems; prognostication of applications of OR models.
(Ford;1983;color;56 min.)

RESERVOIR ROUTING — HEC-538
Discuss HEC-1 reservoir routing capability and limitations. Describe the capability of HEC-5 for use on controlled structures.
(Hayes;1985;color;45 min.)

Computer Program HEC-5

HEC-5 INPUT AND OUTPUT — HEC-466
Input requirements and output examples.
(Hayes;1983;color;62 min.)

MODELING A RESERVOIR SYSTEM WITH HEC-5 — HEC-468
Developing a system model; input requirements for HEC-5; output analysis.
(Bonner;1983;color;60 min.)

OPERATION CRITERIA FOR RESERVOIR SYSTEMS — HEC-469
Concepts of multiple reservoir operation; tandem and parallel reservoirs, index levels; equivalent reservoirs.
(Eichert;1983;color;60 min.)

INTRODUCTION TO HEC-5 — HEC-479
An overview of the capabilities of the HEC program for simulation of Flood Control and Conservation Systems.
(Eichert;1983;color;57 min. & 22 min.)

HEC-5 AUXILIARY PROGRAMS — HEC-617
Use of interactive program INFIVE for the creation of HEC-5 data sets; use of MOD5 to modify an existing HEC-5 data set; use of CKHEC5 for HEC-5 data set error detection; use of MENU5 to facilitate creation and execution of HEC-5 data sets; use of HEC-5 on an IBM-AT computer.
(Eichert/Bowen;1986;color,75 min.)

CASE STUDY: LEHIGH RIVER BASIN, PENNSYLVANIA — HEC-619
Use of HEC-5 for a reservoir storage reallocation study; use of economic data, STATS and DSPLAY for evaluation of alternatives.
(Dotson;1986;color;60 min.)

Tape Number

Flood Control Using HEC-5

OPERATION CRITERIA FOR RESERVOIR SYSTEM — HEC-520
Concepts of multiple reservoir operation; tandem and parallel reservoirs; index levels, equivalent reservoirs.
(Bonner;1983;color;58 min.)

REAL-TIME USE OF HEC-5 — HEC-521
Linking forecast and operating models; use of DSS, MODCON and PREOP. Key variables.
(Bonner;1983;color;53 min.)

FLOOD CONTROL SIMULATION FOR ONE RESERVOIR — HEC-530
Data development for a simulation model for flood control operation.
(Hayes;1984;color;60 min.)

HEC-5 FLOOD CONTROL OPTIONS — HEC-531
HEC-5 flood control options; forecast interval, contingency factor, system flood control guide curves; variable channel capacities, scheduling options and hinge pool option.
(Hayes;1984;color;60 min.)

HEC-5, EMERGENCY FLOOD OPERATION — HEC-533
Use of the HEC-5 option for gated spillway flood routing; RG card input description; simulation of gated and uncontrolled spillways; output analysis.
(Eichert;1984;color;60 min.)

GATED SPILLWAY FLOOD ROUTING — HEC-534
Routing through reservoirs controlled by gated spillways; Modified Puls routing; gate regulation curve computations using computer program SWGRC.
(Peters;1984;color;60 min.)

Water Supply Using HEC-5

WATER SUPPLY YIELD DETERMINATION USING HEC-5 — HEC-473
Use of HEC-5 optimization capabilities to determine yield; determination of storage requirements for a specified demand; example applications.
(Eichert;1983;color;60 min. & 19 min.)

WATER SUPPLY OPERATION USING HEC-5 — HEC-623
General water supply capabilities; minimum desired and required flows; diversions and return flows; evaporation rates; computation interval; operation criteria; applications to multiple reservoir configuration.
(Hayes;1986;color;60 min.)

NOTE: The Risk-based Tapes (HEC-785 thru HEC-800) may be ordered as a set (see order form).

RISK-BASED ANALYSIS

Tape Number

RISK AND UNCERTAINTY - POLICY ISSUES — HEC-772
This presentation overviews the Corps policy on using risk and uncertainty in sizing and evaluating flood damage reduction measures.
(Eiker;1992;color;15 min.)

POLICY STATUS AND RISK-BASED ANALYSIS TRENDS — HEC-785
A description of the present HQUSACE policy, risk-based analysis requirements, and on-going Corps activities is made.
(Daniel;1994;color;39 min.)

OVERVIEW EC ON RISK-BASED ANALYSIS — HEC-786
An overview of the EC 1105-2-205 on Risk-based Analysis Framework for Performing Flood Damage Reduction Studies is presented.
(Moser;1994;color;57 min.)

OVERVIEW OF RISK-BASED ANALYSIS FOR FLOOD DAMAGE REDUCTION PROJECTS — HEC-787
An overview of the concepts of risk-based analysis as they apply to performing flood damage reduction studies is given. The interrelationship of discharge-frequency, stage, and damage functions and their uncertainties is discussed.
(Davis;1994;color;50 min.)

BASIC STATISTICAL ANALYSIS — HEC-788
Random variables, statistical parameters, sampling, and definitions of risk and uncertainty are described.
(Goldman;1994;color;67 min.)

MONTE CARLO SIMULATION — HEC-789
The concepts of Monte Carlo Simulation is presented.
(Goldman;1994;color;45 min.)

DISCHARGE- AND STAGE-FREQUENCY RELATIONSHIP UNCERTAINTY DERIVATION — HEC-790
A presentation of approaches defined in EC 1105-2-205 for estimating the uncertainty of discharge- and stage-frequency relationships is made. The effects of projects that modify these relationships is discussed.
(Goldman;1994;color;60 min.)

STAGE-DISCHARGE RELATIONSHIP UNCERTAINTY DERIVATION — HEC-791
Approaches defined in EC 1105-2-205 for computing stage-damage relationships and fore estimating the uncertainty associated with each approach is presented. The corresponding effects of projects that modify the stage-damage relationship is discussed.
(Moser;1994;color;51 min.)

Tape Number

STAGE-DAMAGE AND RELATIONSHIP UNCERTAINTY DERIVATION — HEC-792

Approaches defined in EC 1105-2-205 for computing stage-damage relationships and for estimating the uncertainty associated with each approach is presented. The corresponding effects of projects that modify the stage-damage relationship is discussed.

(Moser;1994;color;53 min.)

LEVEE PROJECTS — HEC-793

This presentation describes the analysis of existing and new levee projects. Present guidance is overviewed.

(Davis;1994;color;55 min.)

STAGE-FREQUENCY ANALYSIS: WEST SACRAMENTO EXAMPLE — HEC-794

A discussion of the concepts and approach for developing stage-frequency curves and related uncertainties is presented. The use of the Limited Program for West Sacramento is discussed.

(Goldman;1994;color;30 min.)

RISK-BASED ANALYSIS PACKAGE — HEC-795

A detailed overview of the risk-based analysis software package and demonstration of the Chester Creek application for project sizing and reliability analysis is made.

(Dotson;1994;color;46 min.)

OVERVIEW CORPS ACTIVITIES IN RISK-BASED ANALYSIS — HEC-796

An overview of Corps risk-based analysis activities in major rehabilitation, coastal, and navigation areas.

(Daniel;1994;color;53 min.)

PROJECT FORMULATION AND EVALUATION USING RISK-BASED ANALYSIS — HEC-797

This presentation describes project formulation and evaluation procedures for multiple reaches, mixed measures (levees, channels, and reservoirs) projects.

(Burnham;1994;color;61 min.)

PROJECT PERFORMANCE, FUNCTION, AND WORKABILITY — HEC-798

This presentation will address key issues that assure that the project will perform as intended throughout its project life. These elements which are in addition to project justification, are categorized as performance,function, and workability.

(Smith;1994;color;55 min.)

RISK-BASED ANALYSIS PACKAGE - MIXED MEASURES — HEC-799

A presentation describing the analysis procedures for formulating mixed - measure plans are presented. Uncertainty determination methods for reservoirs and channels are given. A demonstration of the Risk-based Analysis Package for formulating mixed - measure plans is performed.

(Dotson;1994;color;39 min.)

	Tape Number
CASE EXAMPLE: PEARL RIVER, JACKSON, MISSISSIPPI An overview of the Pearl River, Jackson, Mississippi, Vicksburg District, project formulation study is given. Emphasis is on procedures used to develop discharge, stage, and damage relationships and associated uncertainties, and preliminary results of project sizing and reliability risk-based analysis applied to evaluate an existing levee system. (Fitzgerald and Wilbanks;1994;color;	HEC-800
LEVEE SIZING AND ANALYSIS USING MONTE CARLO SIMULATION An example of the risk-based analysis approach is presented for Chester Creek, PA. (Davis;1992;color;60 min.)	HEC-775

RIVER HYDRAULICS

Tape Number

Computer Program HEC-2

INTRODUCTION TO COMPUTER PROGRAM HEC-2 — HEC-748
(replaces HEC-407)
General program description; data requirements; computational procedures, critical depth solution; bridge losses, utility features.
(Hayes;1990;color;60 min.)

HEC-2 PACKAGE ON THE PC — HEC-747
General overview of the package of programs available for the PC.
(Bonner;1990;color;60 min.)

INPUT REQUIREMENTS FOR COMPUTER PROGRAM HEC-2 — HEC-749
(replaces HEC-224)
Input format; input for basic applications; optional input; various methods for defining roughness, discharge and starting conditions.
(Bonner;1990;color;60 min.)

OUTPUT ANALYSIS FOR HEC-2 — HEC-750
(replaces HEC-408)
Printout sequence; cross section computation; special notes, profile plot; summary printout; cross section plots; output review.
(Hayes;1990;color;60 min.)

WATER SURFACE PROFILES THROUGH BRIDGES — HEC-687
(replaces HEC-020)
Nature of flow through bridges; approaches to bridge loss computation; components of bridge losses; methods available in HEC-2; selection of method; modeling boundaries.
(Hayes;1987;color;60 min.)

APPLICATION OF THE NORMAL BRIDGE METHOD — HEC-751
(replaces HEC-222/223)
Location of cross sections; input requirements; computational procedure; example application.
(Bonner;1990;color;60 min.)

SPECIAL BRIDGE INPUT REQUIREMENTS — HEC-752
(replaces HEC-269/270)
Location of cross sections; special bridge method input requirements and computational procedures.
(Bonner;1990;color;75 min.)

SPECIAL CULVERT ROUTINE — HEC-753
Use of HEC-2 culvert routine, example applications.
(Hayes;1990;color;70 min.)

CHANNEL IMPROVEMENT ANALYSIS — HEC-465
Use of the HEC-2 Channel Improvement (CHIMP) option; example applications.
(Hayes;1982;color;61 min.)

Tape Number

Computer Program HEC-2 (continued)

FLOODWAY DETERMINATION — HEC-536
Floodway definitions; general guidelines; computer procedures; program input requirements for floodway calculations.
(Hayes;1985,color;60 min.)

FLOODWAY IN UNIQUE SITUATIONS — HEC-700
Floodway study results concerning modeling problems.
(Bonner;1988;color;60 min.)

SUPERCRITICAL FLOW PROFILES — HEC-701
Computing supercritical profiles with HEC-2.
(Hayes;1988;color;60 min.)

NEW FEATURES IN HEC-2 — HEC-702
Program features for "k" values, "n" values and conveyance calculation, added input and output options.
(Hills;1988;color;60 min.)

ADVANCED BRIDGE HYDRAULICS WITH HEC-2 — HEC-703
Typical bridge problems and solution approaches.
(Bonner;1988;color;60 min.)

HEC-2 SPLIT FLOW ANALYSIS — HEC-704
Application of the HEC-2 split flow routines.
(Montalvo;1988;color;60 min.)

CASE STUDY - HEC-2 APPLICATION — HEC-705
(Williams;1988;color;60 min.)

FLOOD CONTROL CHANNEL DESIGN — HEC-741
Concepts and applications of channel modification to reduce flood stages.
(Williams;1989;color;60 min.)

HEC-2 APPLICATION IN HYDRAULIC DESIGN — HEC-742
Methods of applying HEC-2 to design problems.
(Williams;1989;color;60 min.)

Computer Program HEC-RAS

RIVER ANALYSIS SYSTEM (HEC-RAS) OVERVIEW — HEC-801
Overview of Beta version of the steady flow water surface profile program developed for the Windows operating system.
(Brunner;1994;color;75 min.)

Tape Number

Unsteady Flow - DWOPER

COMPARISON OF TRADITIONAL FLOOD ROUTING TECHNIQUES WITH THE UNSTEADY FLOW EQUATIONS — HEC-664
Description of assumptions and limitations of traditional flood routing methods in light of the complete equations. Relative accuracy and regions of applicability.
(Ponce;1987;color;69 min.)

OTHER APPROXIMATIONS TO THE COMPLETE EQUATIONS — HEC-665
Assumptions, limitations, implementation and accuracy of zero inertia and kinematic wave approximations. Advantages and disadvantages.
(Ponce;1987;color;71 min.)

INTRODUCTION TO DWOPER — HEC-666
Origins and history of the National Weather Service's "Dynamic Wave Operational" (DWOPER) unsteady flow model. Characteristics and capabilities.
(Fread;1987;color;68 min.)

DATA REQUIREMENTS FOR DWOPER — HEC-667
Input data requirements, structure, and format. Data sources availability.
(Fread;1987;color;58 min.)

BASIC APPLICATION OF DWOPER (PART 1) — HEC-668
Development of an input data set for simulation of a simple problem. Interpretation of field data in light of model design and limitations.
(Fread;1987;color;Part 1: 65 min.; Part 2: 72 min.)

BASIC APPLICATION OF DWOPER (PART 2) — HEC-669
Development of an input data set for simulation of a simple problem. Interpretation of field data in light of model design and limitations.
(Fread;1987;color;Part 1: 65 min.; Part 2: 72 min.)

DWOPER OUTPUT ANALYSIS AND TROUBLE SHOOTING TECHNIQUES — HEC-670
Sequence and interpretation of model output. Output controls. Execution time error messages. Typical errors and problems. Output checks.
(Fread;1987;color;76 min.)

CALIBRATION TECHNIQUES — HEC-671
Methods of calibrating unsteady flow models. Necessary data and interpretation. Acceptance criteria. Examples of calibration procedures including automatic calibration.
(Fread;1987;color;35 min.)

SPECIALIZED CAPABILITIES OF DWOPER — HEC-672
Modeling flow in branched and looped systems. Modeling internal controls such as locks and dams, levee overflows, etc. Future developments.
(Fread;1987;color;68 min.)

Tape Number

Unsteady Flow - UNET

INTRODUCTION TO UNET — HEC-755
Origins and history of the full network unsteady flow model, UNET. General capabilities and characteristics. Comparisons of capabilities and applicability with other unsteady flow models.
(Barkau;1991;color;60 min.)

THEORETICAL DETAILS OF UNET — HEC-779 (replaces HEC-756)
Methods used to linearize the equations, approximations made, comparisons with procedures used in other unsteady flow models. Implications of the differences with regard to computational efficiency and robustness.
(Barkau;1993;color;60 min.)

COMPUTATIONAL PROCEDURES USED IN UNET — HEC-757
Description of geometric computations for levees and encroachments, loss computations at bridges and internal boundary conditions, lateral inflows and outflows.
(Barkau;1991;color;60 min.)

BOUNDARY CONDITIONS FOR UNET — HEC-758
Description of types of boundary conditions needed/used for various situations. Reach numbering schemes for dendritic and looped systems.
(Barkau;1991;color;60 min.)

MODELING GUIDELINES — HEC-759
Selection of cross sections, delineation of storage areas, pitfalls of using steady flow data, selection of time step, selection of computational distance step, selection of roughness values, role of iteration and tolerances.
(Barkau;1991;color;90 min.)

ADVANCED FEATURES OF UNET — HEC-781 (replaces HEC-760)
Simulation of gated structures, levee breaches, storage areas, real time applications.
(Barkau;1993;color;60 min.)

DATA REQUIREMENTS FOR UNET — HEC-761
Types of data required, sources and availability. Limitations and flexibility of UNET with regard to data. Focus on preparation of cross section data and processing of that data by SCECT.
(Gee;1991;color;60 min.)

OPERATION OF THE UNET SYSTEM — HEC-762
Description of the function of each of the four modules that comprise the UNET system; CSECT, RDSS, UNET, and TABLE. Demonstration of the operation of the system via a menu of a PC.
(Gee;1991;color;45 min.)

OUTPUT ANALYSIS — HEC-763
Available output, how it is controlled and selected, and the relationships among the various time intervals (input data, DSS, computational, and output).
(Brunner;1991;color;45 min.)

Tape Number

Unsteady Flow - UNET (continued)

CALIBRATION OF UNSTEADY FLOW MODELS — HEC-764
Interpretation, use, and reliability of field data; which parameters to calibrate, which parameters to adjust, typical problems and solutions.
(Gee;1991;color;60 min.)

BRIDGES, CULVERTS, AND OTHER INTERNAL BOUNDARY CONDITIONS — HEC-780
Description of geometric computations for levees and encroachments, loss computations at bridges, culverts, internal boundary conditions, and lateral inflows and outflows.
(Barkau;1993;color;75 min.)

MODEL SENSITIVITY — HEC-782
Selection of cross sections, delineation of storage areas, pitfalls of using steady flow data, selection of time step, selection of computational distance step, selection of roughness values, role of iteration and tolerances.
(Barkau;1993;color;60 min.)

CALIBRATION OF UNSTEADY FLOW MODELS FOR ALLUVIAL STREAMS — HEC-783
Interpretation, use, and reliability of field data; which parameters to calibrate, which parameters to adjust, typical problems and solutions.
(Barkau;1993;color;60 min.)

Water Surface Profile Computations

WATER SURFACE PROFILE CALCULATIONS — HEC-685 (replaces HEC-014)
Concepts of open channel flow; energy principles; flow resistance equations.
(Peters;1987;color;75 min.)

DATA REQUIREMENTS FOR RIVER MODELS — HEC-746 (replaces HEC-312/313)
Summary of data requirements; locating cross section detail; loss coefficients.
(Bonner;1990;color;60 min.)

PROFILE ACCURACY — HEC-686
Discussion of the study procedures and findings of a research study on the accuracy of computed water surface profiles performed by HEC for the Federal Highway Administration.
(Burnham;1987;color;60 min.)

Tape
Number

2-D Modeling

INTRODUCTION TO RMA-2 HEC-673
Origin, design and history of the model. Overview of capabilities and limitation. Applications and current usage.
(King;1987;color;67 min.)

THEORETICAL BASIS OF RMA-2 HEC-674
Assumptions and limitations of governing equations. Meaning of the finite element discretization and implications for development of representative data sets. Finite element network construction.
(King;1987;color;54 min.)

DATA REQUIREMENTS FOR RMA-2 HEC-675
Input data requirements and availability. Role of RMA-1 and data flow between the programs.
(Gee;1987;color;63 min.)

BOUNDARY CONDITIONS HEC-676
Meaning and specification of the various boundary conditions available in RMA-2. Guidance on appropriate selection. Examples of problem definition by boundary condition specification.
(King;1987;color;55 min.)

GUIDELINES FOR APPLYING RMA-2 HEC-677
Meaning and specification of various flow parameters. Guidance on values for exchange coefficients for various classes of problems. Data set checking (still tank test, etc.). Calibration techniques.
(MacArthur;1987;color;66 min.)

RMA-2 OUTPUT AND POST-PROCESSING HEC-678
Type of output available interpretation. Meaning of continuity checks and convergence parameters. Methods of displaying calculated flow fields.
(Gee;1987;color;34 min.)

APPLICATION OF RMA-2 TO UNSTEADY FLOW PROBLEMS HEC-679
Selection and definition of boundary conditions. Wetting and drying problems. Interpretation of results.
(King;1987;color;48 min.)

EXTENDED 2-D MODELING HEC-680
Modeling of vertically stratified flows in reservoirs and estuaries, interfacing hydrodynamic models with water quality and sediment transport models, etc.
(King;1987;color;60 min.)

SEDIMENT TRANSPORT

Tape Number

Case Studies

CASE STUDY — HEC-459
Relate case studies back to what program can or may not be able to do; emphasize assumptions that were made and methods that were used.
(Williams/Dyhouse;1980;color;62 min., 32 min. & 07 min.)

Computer Program HEC-6

STREAM HYDRAULICS GRAPHICS PACKAGE FOR HEC-6 — HEC-432
Introduction to the use and capabilities of the Stream Hydraulics Graphics Package as it relates to the HEC-6 computer program.
(Montalvo;1980;color;36 min.)

INTRODUCTION TO HEC-6 — HEC-706
Basic principles, capabilities and limitations, history, computational sequence.
(Gee;1988;color;60 min.)

INPUT DATA REQUIREMENTS FOR HEC-6 — HEC-448
Data requirements; data availability, input structure and format, discussion of what kinds of data go on the I, L, and N (sediment characteristics) cards; what are the variable default values and where did they come from; explain relative importance of the quality of input data to HEC-6.
(Gee;1980;color;58 min.)

DEVELOPMENT OF HYDROLOGIC DATA FOR HEC-6 — HEC-707
Use of USGS stream gage data, data compression via "histogram" generator program, maintenance of flow and sediment volumes, use of flow-duration concepts. Single event analyses vs. long term analyses.
(Copeland;1988;color;60 min.)

INTERPRETATION OF HEC-6 RESULTS — HEC-708
Explanation of output information, control of output, possibilities for post-processing graphics.
(Copeland;1988;color;60 min.)

DEVELOPMENT OF BED MATERIAL DATA FOR HEC-6 — HEC-709
Definition of terms, data requirements of the program, sources of data, costs, sampling procedures, sensitivity of computed results to data variations.
(Copeland;1988;color;60 min.)

DEVELOPMENT OF INFLOWING LOAD DATA FOR HEC-6 — HEC-710
Definition of terms, data requirements of the program, sources of data, costs, sensitivity of computed results to data variations, reliability of field data, strategy for developing a sampling program.
(Sing;1988;color;60 min.)

Tape Number

Computer Program HEC-6 (continued)

HYDRAULIC SORTING AND ARMORING — HEC-711
Procedures used in HEC-6, the concept of a sediment control volume, definition of active and inactive layers, relationship of active and inactive layers to bed material sampling procedures, limitations and assumptions of the procedure.
(Thomas;1988;color;60 min.)

TRANSVERSE DISTRIBUTION OF SCOUR/DEPOSITION — HEC-712
Bank erosion mechanisms, use and interpretation of HEC-6 results for problems that relate to lateral migration, other techniques available.
(Thomas;1988;color;60 min.)

CALIBRATION TECHNIQUES — HEC-713
Techniques for estimating roughness in alluvial streams, selection of computational time interval, geometric adjustments, accuracy measures and (calibration) data requirements, acceptance criteria.
(Thomas;1988;color;60 min.)

UNIQUE FEATURES/APPLICATIONS OF HEC-6 — HEC-714
Application to single flood events, dredging, gravel mining, stream network analysis.
(Thomas;1988;color;60 min.)

NEW CAPABILITIES OF HEC-6 — HEC-454
Introduce gravel mining, interactive operation and plotted results capabilities.
(MacArthur/Montalvo;1980;color;61 min. & 31 min.)

DEBUGGING METHODS AND TROUBLE SHOOTING — HEC-458
Typical problems; print options; methods of debugging; typical bombs and problems with data.
(Williams;1980;color;52 min.)

THEORY AND CONCEPTS OF THE EQUILIBRIUM BED, ARMORING AND SEDIMENT ACCOUNTING CALCULATIONS USED BY HEC-6 — HEC-485
Discussion of procedures used in HEC-6 to simulate changes in bed material gradation and bed armoring; concepts of equilibrium depth and active and inactive bed layers; example calculations.
(Thomas;1982;color;60 min.)

Navigation Requirements

AN OVERVIEW OF THE CORPS DREDGING PROGRAM AND BEACH EROSION CONTROL PROJECTS — HEC-494
Discussion of problems, expenses, methods, and management.
(Hummer;1982;color;60 min.)

OVERVIEW OF HEC'S DREDGE MATERIAL DISPOSAL MANAGEMENT — HEC-495
Discussion of a newly developed dredging management tool "D2M2" for optimizing use of dredges and disposal areas.
(Davis;1982;color;60 min.)

Tape Number

Principles and Methods

PRINCIPLES OF SEDIMENT TRANSPORT — HEC-439

Movement of bed material, mechanics of suspension and settling; shear stress; critical tractive force; effect of hydraulic roughness and how it changes with flow condition, geometry, and temperature; important physical properties of fluids, and sediments (structure, chemistry, etc.) effect of hydraulic conditions.

(Ariathurai;1980;color;60 min. & 5 min.)

MEASUREMENT OF SEDIMENT PROPERTIES, QUANTITIES AND TRANSPORT RATES — HEC-441

Techniques and equipment for measuring bed and suspended load; methods of obtaining bed material samples; data availability, reliability, and costs; effects of seasons and single events, USGS film on Flow in Alluvial Channels (442).

(Childers;1980;color;61 min. & 42 min.)

INTRODUCTION TO SEDIMENT TRANSPORT EQUATIONS — HEC-443

History, assumptions, limitations and advantages of various methods of computing sediment transport; definition of the different portions of total sediment load; basic data requirements, limitations; qualitative comparison of several different methods from the standpoint of data required, ease of use, accuracy, reliability, etc.; Laursen's, DuBoy's, Yang's Einstein's, and Toffaleti's methods.

(Ariathurai;1980;color;50 min.)

TOFFALETI TRANSPORT PROCEDURES AND SYSTEM CHARACTERIZATION — HEC-444

Discussion of Toffaleti's methods, example calculations using Toffaleti's method; discussion of the importance of characterizing the prototype system being modeled.

(Gee;1980;color;54 min.)

PROPERTIES OF NONCOHESIVE SEDIMENT AND CHARACTERISTICS OF ITS MOVEMENT — HEC-481

Physical characteristics of sediment; classification by grain size, significance and calculation of settling velocity, material density, initiation of particle motion; Shield's criteria and usage; definition of bed load, suspended, total load, etc.

(Krone;1982;color;60 min. & 9 min.)

PROPERTIES OF COHESIVE SEDIMENT AND CHARACTERISTICS OF ITS MOVEMENT — HEC-483

Physical and chemical characteristics of cohesive sediments, effects of turbulence and ion concentrations, and methods of determining incipient motion; the occurrence of scour and deposition.

(Krone;1982;color;60 min.)

Tape Number

Principles and Methods (continued)

PROCEDURES FOR ORGANIZING AND CONDUCTING A SEDIMENT INVESTIGATION AND DATA-COLLECTION PROGRAM — HEC-484

What important sediment characteristics should be measured for various kinds of sediment-related problems and how to establish and conduct a data gathering program, typical costs.

(Childers;1983;color;52 min.)

METHODS OF ADDRESSING MULTIDIMENSIONAL SEDIMENT TRANSPORT AND CIRCULATION PROBLEMS — HEC-486

Recent developments and applications of multidimensional numerical models to simulate complex sediment transport problems.

(Ariathurai;1982;color;55 min.)

EVALUATION OF SEDIMENT-RELATED PROBLEMS WITH THE USE OF PHYSICAL MODELS — HEC-487

What is a physical model, when are they appropriate, what kinds of problems are they best suited for, how much time and what does it take to conduct a physical model investigation, how can physical models be used in conjunction with numerical models (e.g., hybrid models), methods of estimating local scour problems, effects of model distortion, limitations, research needs; methods of computing similarity and distortion criteria for river and reservoir simulations; computation of sediment material similarity criteria; limitations, problems.

(Glover;1982;color;60 min.)

SURFACE EROSION - THE PROCESSES AND CONSEQUENCES — HEC-488

Discussion of the physics of overland flow and erosion; gullying; problems and consequences; methods of quantifying various aspects of erosion, soil loss, and mass wasting.

(Steffen;1982;color;52 min.)

COMPUTATIONAL METHODS FOR ESTIMATING SOIL LOSS AND SEDIMENT DELIVERY FROM A WATERSHED — HEC-489

How to compute soil loss, sediment production rates and delivery ratios; design methods for sediment traps and debris basins.

(Steffen;1982;color;59 min.)

FIELD INVESTIGATION METHODS — HEC-496

Details of how to plan, organize and conduct a detailed field inspection in order to identify potential sediment problems.

(Vanoni;1982;color;60 min.)

ENVIRONMENTAL CONSIDERATIONS - SOME IMPACTS AND CONSEQUENCES OF SEDIMENT — HEC-497

Review of sediment-related problems associated with rivers, lakes and estuaries; consideration of both beneficial and detrimental effects of sediment on water quality and ecology of water bodies.

(Goldman;1983;color;60 min. & 50 min.)

Tape Number

Procedures to Conduct a Sediment Study

SUMMARY OF STEPS, METHODS, DATA AND PROCEDURES TO CONDUCT A SEDIMENT STUDY USING HEC-6 — HEC-462
(Williams;1980;color;28 min.)

Reservoir Sedimentation

RESERVOIR SEDIMENTATION — HEC-191
The location of sediment deposits; the magnitude; the influence of hydrology; the influence of the construction of a project on sediment deposition profiles are discussed.
(Thomas;1976;b/w;62 min. & 04 min.)

Scour

METHODS OF EROSION CONTROL — HEC-490
Procedures for the control or erosion and soil loss due to road construction, development practices, agricultural activities; emergency methods and placement and construction of control structures.
(Steffen;1982;color;45 min.)

STREAMBANK EROSION CONTROL, BANK STABILIZATION AND RIVER TRAINING METHODS — HEC-491
Missouri River Division's experiences and case histories of river bank stabilization methods and procedures; summary of the Section 32 research program.
(Mellema;1982;color;56 min.)

STABLE CHANNEL DESIGN PROCEDURES — HEC-492
Computational methods for evaluating and designing stable earthen channels.
(Smith;1982;color;60 min.)

PURPOSE, APPLICATION AND GENERAL DESIGN CONSIDERATIONS FOR RIP RAP, GABIONS, LOG CRIBBS AND CONCRETE MATRESSING — HEC-493
Where, when and how to use structural protection to minimize river bank erosion; other alternatives.
(Smith;1982;color;60 min.)

SPATIAL DATA MANAGEMENT

Tape
Number

HYDROLOGIC ANALYSIS USING SPATIAL DATA MANAGEMENT TECHNIQUES — HEC-644

Describe use of SAM for complex multibasin watershed analysis.
(Ford;1987;color;90 min.)

STATISTICAL METHODS

Tape Number

Computer Program STATS

INTRODUCTION TO STATISTICAL ANALYSIS OF TIME SERIES DATA — HEC-618
Capabilities of computer program STATS; example applications.
(Kubik;1986;color;60 min.)

Flood Frequency Analysis

INTRODUCTION TO PROBABILITY, STATISTICS AND DISTRIBUTIONS — HEC-784
Objectives os statistical analyses, definitions; types of variables, histograms; cumulative distributions; concepts of parent population; binomial and normal distributions; parameters used to define distributions - mean, median, mode, standard deviation, skew coefficient.
Purpose of frequency analysis; the nature of hydrologic, phenomena; data consideration; characteristics of random variables; distinction between risk and uncertainty; use of binomial equation to determine risk.
(Goldman;1994;color;96 min.)

DETERMINATION OF DISCHARGE-FREQUENCY RELATIONSHIPS — HEC-507
Description of various techniques to determine flood-frequency relationships: Bulletin 17B, regional frequency, USGS regional equations, and design storms.
(Burnham;1983;color;50 min.)

CONCEPTS AND PRINCIPLES OF FLOW FREQUENCY ANALYSIS — HEC-522
An introduction to the probability concepts of hydrologic phenomena, the distinction between risk and uncertainty, and a general approach to flow frequency analysis; the definition of the frequency curve.
(Ford;1984;color)

WEIGHTING PROCEDURE FOR GENERALIZED SKEW — HEC-544
Uncertainty in computed skew coefficient; mean square error; computation of weighted skew.
(Kubik;1985;color;60 min.)

RELIABILITY OF FREQUENCY ESTIMATES — HEC-545
Techniques for determining reliability; sampling errors of mean, standard deviation, and skew; statistical significance; confidence limits.
(Kubik;1985;color;60 min.)

RISK AND UNCERTAINTY — HEC-546
Examples of risk and uncertainty; bias in frequency estimates; expected probability adjustment; use of risk and uncertainty in project design.
(Davis;1985;color;60 min.)

STREAMFLOW FREQUENCY CONCEPTS — HEC-552
Concepts and principles of flow frequency analysis; overview of frequency analysis methods; interpretation of frequency curves; basic steps involved in development of frequency curves.
(Kubik;1985;color;60 min.)

Tape Number

Flood Frequency Analysis (continued)

FREQUENCY ANALYSIS BY COMPUTER — HEC-591
Introduction to Flood Flow Frequency Analysis computer program; program capabilities; methods of computation; input structure; review of output; overview of the capabilities of the computer program STATS.
(Dotson;1986;color;60 min.)

STATISTICAL TREATMENT OF DATA — HEC-592
Procedure for treating broken record, incomplete record, zero flood years, and mixed populations.
(Goldman;1986;color;65 min.)

OUTLIERS AND USE OF HISTORIC INFORMATION — HEC-593
Procedures for computing criteria and treating high and low outliers; use of historical flood information.
(Kubik;1986;color;60 min.)

DEVELOPMENT OF FREQUENCY CURVES IN AREAS UNDERGOING URBANIZATION — HEC-594
Statistical considerations and assumptions in frequency analysis of rainfall and runoff as they pertain to watersheds undergoing urban development; methods of analysis.
(Feldman;1986;color;60 min.)

STREAMFLOW FREQUENCY CONCEPTS — HEC-683
Concepts and principles of flow frequency analysis; overview of frequency analysis methods; interpretation of frequency curves; basic steps involved in development of frequency curves.
(Kubik;1987;color;60 min.)

USE OF PRECIPITATION-RUNOFF MODELS TO DEVELOP DISCHARGE-FREQUENCY CURVES — HEC-739
Approaches to determination of frequency curves from precipitation-runoff models. Use of multiple hypothetical events in HEC-1. Calibration to adopted frequency relationships.
(Davis;1989;color;60 min.)

Regional Analysis

APPLICATION OF MULTIPLE LINEAR REGRESSION — HEC-547
Applications in hydrologic analyses; formulation of regression models; effects of nonlinearities; transformations; interpreting results.
(Carl;1985;color;60 min.)

RELIABILITY OF REGRESSION RESULTS — HEC-548
Standard error of estimate; error in predicted Y values; confidence limits about regression line.
(Kubik;1985;color;60 min.)

	Tape Number
Regional Analysis (continued)	
DEVELOPMENT OF GENERALIZED SKEW COEFFICIENTS Procedural steps in Bulletin 17B; problems with mapping skew; mean square error; case study - Delaware River Basin. (Kubik;1985;color;60 min.)	HEC-549
RELIABILITY OF REGIONALIZED RESULTS Worth of regionalized results, sensitivity of process to regional values. (Dawdy;1985;color;60 min.)	HEC-550

URBAN HYDROLOGY

Tape Number

Effects of Urbanization

EFFECT OF BASIN DEVELOPMENT ON FREQUENCY CURVES — HEC-508
Effect of basin development on the hydrologic system. Describe how urbanization, reservoirs, levees and channel modifications impact on the frequency curve.
(Burnham;1983;color;44 min.)

EFFECT OF URBANIZATION — HEC-509
Discuss the effects of urbanization on the hydrologic system and describe the method of analysis using the kinematic wave method.
(DeVries;1983;color;52 min.)

Methods of Analysis

DETERMINATION OF KINEMATIC WAVE PARAMETERS — HEC-510
Techniques for developing kinematic wave parameters and application using HEC-1.
(DeVries;1983;color;62 min.)

WATER QUALITY

Tape
Number

Water Quality Using HEC-5Q

INTRODUCTION TO HEC-5Q — HEC-535

An overview of the water quality analysis version of computer program HEC-5.
(Willey;1984;color;60 min.)

WATER RESOURCE PLANNING

Tape Number

Data Storage System

USE OF THE HEC DATA STORAGE SYSTEM FOR WATER AND PLANNING STUDIES — HEC-467
Capability of HEC system HECDSS and water control software; application of HECDSS: use of functions, macros and menus.
(Pabst;1983;color;62 min.)

CAPABILITIES OF DISPLAY — HEC-470
Program options and applications.
(Montalvo;1983;color;52 min.)

OVERVIEW OF GIS — HEC-735
An overview of the concepts and capabilities of geographic information systems will be given.
(Dangermond;1989;color;60 min.)

GIS APPLICATION — HEC-736
An overview of applications of GIS for planning purposes will be made.
(Dangermond;1989;color;60 min.)

Environmental and Social

ENVIRONMENTAL, SOCIAL AND INSTITUTIONAL CONSIDERATIONS — HEC-582
Discussion of environmental, social, and institutional study considerations. Emphasis on environmental evaluation requirements (NEPA, endangered species, EIS, etc.). Interface and sensitivity of hydrologic information for environmental assessments.
(Orth;1986;color;60 min.)

Flood Damage Analysis

PLANING IN THE CORPS OF ENGINEERS — HEC-766
An overview of the planning process is presented. The Corps' role in flood control planning and the authorization, review, and certification process of different types of studies from planning through construction is presented.
(Davis;1992;color;50 min.)

FEASIBILITY STUDIES — HEC-767
An overview of requirements and procedures for performing flood damage reduction feasibility studies from the District perspective is presented. Funding, technical studies, level of detail, reviews and interaction with cost-shared partners is discussed for both reconnaissance phase and feasibility-phase studies.
(Burnham;1992;color;50 min.)

ECONOMIC EVALUATION OF FLOOD CONTROL ALTERNATIVES — HEC-080
Basic economic concepts, damage function derivation and manipulation; benefits categorization, selection of representative hydrology.
(Davis;1975;b/w;60 min. & 06 min.)

Tape
Number

Flood Damage Analysis (continued)

ECONOMICS OF FLOOD CONTROL PROJECTS — HEC-580
Discussion of federal economic investments and evaluation concepts, federal and Corps investigative requirements, and procedures for determining costs, net benefits, and benefit-cost ratios. Assessment considerations of existing and future "with" and "without" conditions will be presented.
(Ford;1986;color;60 min.)

FLOOD DAMAGE EVALUATION PROCEDURES — HEC-581
Presentation of procedures for performing flood damage surveys, damage function development (stage-damage curves), damage reach delineation, and aggregation of damage relationships to index locations. The interaction of hydrologic-hydraulic data with flood damage data to determine expected annual damage values will be presented. Concepts of agricultural flood damage analysis will also be overviewed.
(Burnham;1986;color;55 min.)

ECONOMIC AND ENGINEERING CHARACTERISTICS OF NONSTRUCTURAL MEASURES — HEC-585
The economic and engineering characteristics of nonstructural measures are described. Categorization of the measures for plan formulation is also discussed. Emphasis is placed on flood warning-emergency preparedness plans.
(Burnham;1986;color;55 min.)

OVERVIEW OF FLOOD DAMAGE CALCULATIONS — HEC-631
Description of the hydrologic, hydraulic, and economic relationships used in flood damage calculations. Discussion of plan formulation and evaluation.
(Davis;1987;color;60 min.)

DESCRIPTION OF THE EXPECTED ANNUAL DAMAGE PROGRAM — HEC-632
Development and application of the EAD program; expected annual flood damage computations using the program, including computational techniques and limitations. Analysis and usage of input and output.
(Ford;1987;color;60 min.)

OVERVIEW OF THE HEC FLOOD DAMAGE ANALYSIS PACKAGE — HEC-633
Overview of the hydrologic and hydraulic computer programs HEC-1, HEC-5, and HEC-2; the damage function and structure inventory programs SID, SIDEDT, and DAMCAL; the plan evaluation program EAD; the data management software DSS; the data management utility programs DSSUTL, DSPLAY, and PIP.
(Davis;1987;color;30 min.)

CASE STUDY — HEC-634
Louisville District's experience using HEC FDA package.
(O'Leary;1987;color;60 min.)

Tape Number

Flood Damage Analysis (continued)

DESCRIPTION OF DSS PAIRED FUNCTION DATA. USE OF COMPUTER PROGRAMS PIP AND DSSPD — HEC-635

Definition of paired function data. Types of relationships stored. Conventions for pathname parts. Description of the program PIP; DSS file and DATAFILE files, menus, operation. Description of the DSSPD program.

(Carl;1987;color;60 min.)

DESCRIPTION OF HECDSS UTILITY PROGRAMS HECDSS-DSPLAY AND HECDSS-DSSUTL — HEC-636

Use of DSSUTL options: Catalog (and selective Catalog), display pathnames, Tabulate, Edit, Rename, Delete, Copy, Read/Write from/to ASCII file, Format, Squeeze, and Help. Use of DSPLAY to plot and tabulate data - - definition of "curves".

(Huff;1987;color;60 min.)

DEVELOPMENT OF ELEVATION-DAMAGE DATA — HEC-637

Overview of data requirements and data sources. Inventory techniques. Data aggregation and disaggregation.

(Burnham;1987;color;60 min.)

DESCRIPTION OF THE SID COMPUTER PROGRAM — HEC-638

Instructions on the basic features and capabilities of computer program SID. Aggregation of damage. Description of input and output. Flood zone summary output. Computation of basement and multistory damage.

(Barkin;1987;color;60 min.)

DESCRIPTION OF THE SIDEDT COMPUTER PROGRAM — HEC-639

Description of the features and capabilities of the SIDEDT computer program. The role of SIDEDT-SID in management of damage function and structure inventory files.

(Barkin;1987;color;60 min.)

DESCRIPTION OF ADDITIONAL SID OPTIONS: DSS LINKAGE TO EAD AND THE FILE COMMUNICATION WITH SIDEDT — HEC-640

Description of the expanded SID options; single event damage, nonstructural measures, future condition analysis. Application with DSS including required input data and the relationship of tabular output to DSS output.

(Barkin;1987;color;60 min.)

DESCRIPTION OF ADDITIONAL EAD OPTIONS — HEC-641

The DSS linkage with SID and PIP; writing results to a DSS file; computation of affluence.

(Carl;1987;color;60 min.)

CASE STUDY 2 - STRUCTURE INVENTORY AND ELEVATION-DAMAGE RELATIONSHIP DEVELOPMENT USING SID — HEC-738

A case study describing the structure inventory and elevation-damage relationship development using the SID and SIDEDIT computer programs will be presented.

(O'Leary;1989;color;60 min.)

Tape Number

Formulation

METHODS FOR HYDROLOGIC EVALUATION OF FLOOD CONTROL SYSTEMS — HEC-471

Developing flow data for evaluation of flood control system performance; use of historic data; design storms; single event modeling; period of record analysis.

(Davis;1983;color;58 min.)

Hydrologic Engineering for Planning

INTRODUCTION TO HYDROLOGIC ENGINEERING — HEC-647

The role of hydrologic analysis in planning will be presented. The objectives and basic concepts involved in hydrologic evaluations and the contrast between the hydrologic process and evaluation needs will be discussed.

(Bonner;1987;color;60 min.)

INTRODUCTION TO HYDROGRAPH ANALYSIS — HEC-648

Description of hydrologic system components, and their relative importance in analysis, basin precipitation and loss determination, and the theory, assumptions and applications of unit hydrographs and base flow will be presented.

(Peters;1987;color;60 min.)

UNIT HYDROGRAPH DERIVATION AND LOSS RATE EVALUATION — HEC-649

Demonstrate the derivation of a unit hydrograph by the isolated storm method and the determination of a uniform loss rate.

(Willey;1987;color;60 min.)

INTRODUCTION TO FLOOD ROUTING — HEC-650

The effects of natural valley and reservoir storage on streamflow and the purpose of flood routing will be presented. The contrast between conservation and streamflow routing will be defined. The technical application area of unsteady flow hydraulics will be introduced.

(Gee;1987;color;60 min.)

SEDIMENT TRANSPORT IN NATURAL STREAMS — HEC-651

The natural formation of stream channels flowing through alluvial material will be presented. Concepts of sediment transport and the effects of physical works will be discussed.

(Kuo;1987;color;60 min.)

BASIC PRINCIPLES OF STREAMFLOW PROFILES — HEC-652

Procedures for relating flow to stage will be discussed. Basic concepts of open channel hydraulics, including energy losses and gradually varied flow profiles will be presented.

(Hayes;1987;color;60 min.)

Tape Number

Hydrologic Engineering for Planning (continued)

DATA REQUIREMENTS FOR HYDRAULIC ANALYSIS — HEC-653
Data requirements and reliability of computations will be presented. The relative effect of various factors of flow, geometry, roughness and local obstructions will also be illustrated and discussed.
(Burnham;1987;color;60 min.)

CONCEPTS AND PRINCIPLES OF FLOW FREQUENCY ANALYSIS — HEC-654
An introduction to the probability concepts of hydrologic phenomena, the distinctions between risk and uncertainty, and a general approach to flow frequency analysis will be given. The frequency curve will be defined.
(Ford;1987;color;60 min.)

DETERMINATION OF FLOW FREQUENCY CURVES — HEC-655
Graphical and analytical techniques and their respective applications will be presented. The reliability of derived frequency curves and the principles of regional analysis will be discussed.
(Kubik;1987;color;60 min.)

ANALYTICAL PERSPECTIVE OF FLOOD DAMAGE MITIGATION MEASURES — HEC-656
The effect of changing the land use, adding reservoirs, levees, and channel modifications on frequency curves will be discussed.
(Burnham;1987;color;60 min.)

RISK AND RELIABILITY IN PLANNING — HEC-657
Procedures for the use of frequency estimates, risk computations, period of record and stochastic sequences, damage estimates, and shortage indices will be presented. Interrelationships between these topics and their use as indicators in flood and conservation planning will be described.
(Johnson;1987;color;60 min.)

CASE STUDY - RAHWAY RIVER BASIN — HEC-658
Determination of discharge-frequency relationships for the Rahway River Basin, NJ will be presented. Use of available data, study procedure and results will be emphasized.
(Feldman;1987;color;60 min.)

CONCEPTS OF RESERVOIR SIZING AND OPERATION — HEC-659
The need for and use of reservoir storage for flood control and water supply will be presented and discussed. Concepts in sizing and operation of water supply and flood control reservoirs, and the complementary and competitive aspects of multipurpose projects will be described.
(Hayes;1987;color;60 min.)

Tape Number

Hydrologic Engineering for Planning (continued)

RESERVOIR YIELD — HEC-660
Reservoir yield analyses are used to determine the water supply potential of reservoirs for such uses as flow augmentation, M&I, irrigation, and water quality demands. The application of low flow frequency curves and duration curves, and simulation studies will be presented. Water demands and the relationship to supply will be presented.
(Dotson;1987;color;60 min.)

HYDROLOGIC ASPECTS OF PLANNING STUDIES — HEC-661
The types of hydrologic analysis appropriate for the usual range of planning studies will be discussed. The role that hydrologic analysis plans in plan formulation and evaluation will be stressed.
(Davis;1987;color;75 min.)

HYDROLOGIC ENGINEERING MODELS — HEC-662
The various categories of hydrologic models will be discussed. A selection of statistical, single storm event simulation, continuous synthesis and operation and analysis models will be described.
(Feldman;1987;color;60 min.)

HYDROGRAPH ANALYSIS OF UNGAGED BASINS — HEC-663
General concepts and selected techniques for evaluation of ungaged basins. General concepts of regionalization will also be presented. The effects of land use on the hydrology of urban watershed will be described.
(Brunner;1987;color;60 min.)

Planning Issues

HYDROLOGIC/HYDRAULIC ISSUES, OCE PERSPECTIVE — HEC-584
Major issues effecting the interface of hydrologic/hydraulic studies in planning investigations from the OCE perspective. Reporting requirements and applicability of conferences involving higher authority to resolve major hydrologic/hydraulic study issues will also be discussed.
(Smith;1986;color;70 min.)

PLANNING ISSUES - DISTRICT PERSPECTIVE — HEC-587
Major issues that confront project coordination and performance of the planning process in Corps District offices will be presented. The material will cover factors that impact on the hydrologic/hydraulic study interface with planning investigations from the perspective of project coordinators and their supervisors.
(Yep;1986;color;75 min.)

FUTURE OF CORPS PLANNING — HEC-590
The future of planning in the Corps of Engineers. Trends in planning studies, relationships between participating professionals; the expected Corps flood control planning study in 1990.
(Green;1986;;color;75 min.)

Tape Number

Planning Issues (continued)

OVERVIEW OF DESIGN STUDIES — HEC-768
This presentation discusses the hydrologic engineer's role in Preconstruction Engineering and Design (PED) studies, and Engineering and Design. It provides an overview of the plan design after the feasibility study recommends a plan and prior to construction.
(Kamien;1992;color;60 min.)

INITIAL PROJECT MANAGEMENT PLANS (IPMP) — HEC-769
This presentation is an overview of the purpose and importance of developing and using IPMP's by hydrologic engineers.
(Eiker;1992;color;45 min.)

PLANNING IN THE COST-SHARED ENVIRONMENT - PLANNING PERSPECTIVE — HEC-770
The presentation discusses the Corps' planning in a cost-shared environment from a district planning perspective.
(Cooper;1992;color;55 min.)

PLANNING IN THE COST-SHARED ENVIRONMENT - HYDROLOGY AND HYDRAULICS PERSPECTIVE — HEC-771
The presentation discusses the Corps' planning in a cost-shared environment from a division hydraulics and hydrology perspective.
(Davis;1992;color;55 min.)

REVIEW OF PLANNING STUDIES — HEC-776
This presentation describes the responsibilities of the procedures used by the Washington Level Review Center for feasibility studies and the lessons learned from review of these studies in the cost-shared environment.
(Banashek;1992;color;75 min.

HYDROLOGIC ENGINEERING AS A PROFESSION — HEC-777
An overview of the hydrologic engineering profession is presented from an academic, government, and private industry perspective. Topics covered include a history of hydrologic engineering and projects on where the profession is going and what the needs will be.
(Cassidy;1992;color;75 min.)

Planning Models

OVERVIEW FEDERAL PLANNING AND PROJECT AUTHORIZATION — HEC-576
An overview of the types of federal water resources investigations, Congressional authorization and appropriation considerations, and the role of Districts, Divisions, and BERH and OCE in planning, design and construction of Corps projects is presented.
(Davis;1986;color;70 min.)

Tape Number

Planning Models (continued)

CORPS IMPLEMENTATION OF MULTIOBJECTIVE PLANNING CONCEPTS — HEC-577

Definition of multiobjective planning and overview of Corps policy and process. Description of progression of feasibility studies through the stages of the planning process and of the varying emphasis throughout the process. Discussion of the iterative nature of screening measures and development of plans. Overview of implementation considerations of the Corps and other agencies including present cost-sharing requirements.

(Davis;1986;color;75 min.)

PERFORMANCE CHARACTERIZATION OF MEASURES — HEC-578

Description of characteristics of structural and nonstructural flood damage mitigation measures with emphasis of the effects of the measures on hydrologic (hydraulic) flood damage analysis relationships, project costs and other study aspects. Sensitivity of hydrologic-hydraulic estimates on other aspects of planning investigations.

(Ford;1986;color;55 min.)

ANALYTICAL EVALUATION TOOLS OVERVIEW — HEC-579

Categorization and description of analytical procedures and computerized tools available for performing the basic hydrologic engineering and closely associated plan formulation and evaluation aspects of planning investigations.

(Ford;1986;color;55 min.)

PLAN FORMULATION CASE STUDY — HEC-586

A project case study will be presented that describes a strategy for formulating and evaluating structural and nonstructural measures to determine the recommended action or plan for implementation.

(Pronovost;1986;color;75 min.)

A STRATEGY FOR FORMULATING FLOOD CONTROL SYSTEMS — HEC-588

Description of a systematic noncomputer, logic-based procedure for selected and optimal combination of flood control measures for a regional flood control system.

(Davis;1986;color;60 min.)

HYDROLOGIC ANALYSIS FOR NON-FLOOD PLANNING STUDIES — HEC-589

An overview of hydrologic/hydraulic analysis requirements for non-flood surface water investigations will be presented.

(Dotson;1986;color;50 min.)

Risk and Uncertainty

RISK AND UNCERTAINTY — HEC-583

Concepts of risk and uncertainty; discussion of the issues involved in determining levels of protection; residual damage analysis.

(Johnson;1986;color;55 min.)

WATER SUPPLY

Tape Number

Computer Programs HEC-3 and HEC-5

WATER SUPPLY YIELD DETERMINATION USING HEC-5 — HEC-473
Use of HEC-5 optimization capabilities to determine yield; determination of storage requirements for a specified demand; example applications.
(Eichert;1983;color;60 min. & 19 min.)

Methods of Analysis

STOCHASTIC ANALYSIS OF DROUGHT PHENOMENA — HEC-543
Probabilistic models; stochastic process; drought statistics, HEC-4 monthly streamflow operation.
(Goldman;1985;color;60 min.)

DEVELOPING FLOW DATA FOR CONSERVATION — HEC-622
Types of data required; computerized methods of accessing and developing flow data; use of HECDSS data entry programs; application of program MATHPK.
(Dotson;1986;color;60 min.)

Water Balance

HYDROLOGY OF WATER SUPPLY — HEC-541
Surface and ground water sources; droughts and floods; surface water storage and withdrawal; shortages and surpluses.
(Feldman;1985;color;60 min.)

APPLICATION OF SPREADSHEETS SOFTWARE TO WATER BALANCE DEVELOPMENT — HEC-542
Structure, capability, and use of microcomputer spreadsheet and database for water supply and use data.
(Johnson;1985;color;60 min.)